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ABSTRACT

The author traces reasons to support his contention that the state of the art in assessing learning disabled students is not good. Among issues examined are the following: use of tests for purposes other than those for which they were intended; technical adequacy of currently used tests (standardization, reliability, validity); the use of deficit scores to identify the learning disabled; bias in assessment; bias following assessment; and assessment of abilities vs. assessment of skills. The questions of who is to test and who is to make decisions regarding placement are addressed. Six factors, including increased disillusionment on the part of classroom teachers with the kinds and quality of assessment and increased emphasis on the rights of children are seen to be bringing about change. The importance of differentiating assessment, viewing tests as samples of behavior, and using technically adequate tests is underscored. (CL)

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University of Minnesota

Research Report No. 1

ASSESSING THE LEARNING DISABLED YOUNGSTER: THE STATE OF THE ART

James E. Ysseldyke

IRLD

Institute for Research on Learning Disabilities

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I. Adequacy of Norm-Referenced Data for Prediction of Success

II. Computer Simulation Research on the Assessment/Decision-making/Intervention Process

III. Comparative Research on Children Labeled LD and Children Failing Academically but not Labeled LD

IV. Surveys on In-the-Field Assessment, Decision Making, and Intervention

V. Ethological Research on Placement Team Decision Making

VI. Bias Following Assessment

VII. Reliability and Validity of Formative Evaluation Procedures

VIII. Data-Utilization Systems in Instructional Programming

Additional information on these research areas may be obtained by writing to the Editor at the Institute.

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James E. Ysseldyke

Institute for Research on Learning Disabilities

University of Minnesota

November, 1977

Assessing the Learning Disabled Youngster:
The State of the Art

My major objective this morning is to present an overview of the "state of the art" in the assessment of learning disabled youngsters. Nearly all of you are intimately involved in the issues I will address, either as parents of learning disabled children or as those charged with the task of educating learning disabled children. What I am going to argue in this presentation may be greeted with open hostility by some of you, personal discomfort by many of you, and as controversial by most.

The positions that I am going to take are not influenced by a desire on my part to be sensational or melodramatic. I have been and continue to be troubled by some of the directions that have been taken and the assumptions that have been made regarding the area of learning disabilities, both from an academic and a pragmatic perspective. The concerns and beliefs that I will present are the result of a good bit of incubation on my part and of spirited debate with my professional colleagues. They stem directly from an observation on my part of the considerable gap that exists between current beliefs and practices in the field of learning disabilities and research evidence for the validity of those beliefs and practices. They reflect my desire to see this field move forward from its current overreliance on testimonial evidence to considerably more reliance on research findings and on practices with demonstrated validity.

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First, I want to emphasize that my professional life is, and presumably will continue to be, focused on studying how best to deal with children who have trouble in school and on the preparation of educators and school psychologists to deal effectively and efficiently with such youngsters. These emphases are compatible with those of the Minnesota Association for Children with Learning Disabilities as well as with those of other professional organizations who have an interest in general and special education. I appreciate the opportunity to address this group.

The "state of the art" in assessment of learning disabled children is not good. Major theoretical, conceptual, practical, and empirical issues exist in the assessment of learning disabled children. They can be grouped under three broad headings. First, the field has been characterized by the absence of a conceptual framework. Second, many of the current issues are decision-making issues. Third, many issues and problems are apparent in the use of assessment data to plan interventions for learning disabled children.

Conceptual Issues

In many ways, the field of learning disabilities was formed around a label, one that was accepted because it offered an alternative to stigmatizing, inaccurate, or medical labels such as brain-injury, minimal cerebral dysfunction, organic behavior disorder, perceptual handicap, central processing dysfunction, or dyslexia. The label "learning disabled" has remained ambiguous; the broad scope of the term has enabled children who evidence many different kinds of school-related problems to be grouped together.

The federal definition of children with specific learning disabilities is widely regarded as inadequate by most practitioners and is adopted per se by only nine states. Children with learning disabilities are defined differently in different states. Mercer, Forgnone and Wolking (1976) conducted a survey of definitions used by state departments of education. Their findings are summarized in Table 1. Eighty-three percent of the 42 states that responded included reference to process deficits or disorders in their definitions. Academic criteria are specified in 74% of the definitions. There is considerably greater variability in other components of the definition. While 52% of the states do not specify level of intelligence as a criterion, 19% require that children score above the retarded range, while 26% require average or above average intelligence. Ten percent of the definitions state that learning disabled children have a central nervous system dysfunction; 14% include "socially maladjusted" in their criteria for identification as learning disabled. Clearly, the term learning disabled is nebulous; identification as LD is often a function one's geographic location.

Insert Table 1 about here

Because of the absence of a conceptual framework and resultant vagueness and variability in definition, we have an extremely heterogeneous group of children identified as learning disabled.

Decision-Making Issues

I define assessment broadly, as the process of collecting data

for the purpose of making educational decisions for and about children. Assessment is not synonymous with testing; testing is one part of assessment.

John Salvia and I (1978) have identified five different kinds of decisions made using assessment data--screening or identification decisions, classification or placement decisions, the planning of instructional interventions, evaluation of individual pupil progress, and program evaluation. Educators engage in assessment for the purpose of helping them make these different kinds of decisions.

Teachers, and sometimes diagnostic specialists, administer tests to groups of children for the purpose of identifying those who are sufficiently different from "normal" or average that further assessment is believed warranted. Currently, in efforts to comply with Public Law 94-142, school systems and state education agencies must provide evidence that they are engaged in extensive "child find" activities. Such efforts are being implemented even at the preschool level where we witness an increase in efforts to identify young children with "incipient learning disabilities." Massive screening of young children, in settings as diverse as public schools and shopping centers, is going on with little regard for the fact that, with the exception of youngsters who are severely developmentally delayed, our predictions are extremely inaccurate.

Second, assessment data are collected to help professionals make classification and placement decisions. Most state standards require that before changes are made in children's educational placements, individual psychoeducational assessments must be done. Professionals

attempt to identify the extent to which a child is handicapped, the specific nature of the handicap, and to find the "least restrictive" educational environment for the child.

The third kind of decision is intervention planning. With the rise of services to children labelled learning disabled, we have witnessed a dramatic increase in efforts designed to plan interventions for children according to their performance on batteries of diagnostic devices. Educators readily speak of being engaged in "diagnostic-prescriptive teaching," although, as we shall see, this term means different things to different people.

Fourth, assessment data are used to evaluate individual pupil progress. Parents, teachers, administrators, and children themselves have a right and need to know the extent to which children are profiting from the educational services they receive. Individual pupil progress may be evaluated either by examining the extent to which the pupil has achieved specific curricular objectives, or by looking at the pupil's performance relative to that of others the pupil's age.

Finally, assessment data are used to evaluate the relative effectiveness of alternative instructional programs. Typically, tests are administered before and after institution of a program, pupil gains are examined, and program effectiveness is ascertained.

The next section of this paper describes the current issues I see in assessment of learning disabled children, without specific regard to their order of importance. Obviously, there is considerable overlap among these issues. While some issues are specific to one kind of decision, most are interrelated and cut across the entire decision-making matrix.

Current Issues in the Assessment of Learning Disabled Children

The Use of Tests for Purposes Other than Those for Which They Were Designed

I have just outlined the kinds of educational decisions that are made using assessment data. Each of the five kinds of decisions requires that we use different assessment procedures and devices. A fundamental difficulty underlying all other assessment issues has been a failure on the part of decision-makers to differentiate their assessment strategies and tools in light of the kinds of decisions to be made. We repeatedly witness the use of tests for purposes other than those for which they were designed. For example, the most commonly used individual intelligence tests were designed to assist us in making identification and classification decisions. Many currently used individual intelligence tests are very adequate for these purposes; they tell us the extent to which a youngster differs from others his/her age. Yet, we repeatedly see intelligence tests being used to plan specific educational interventions for children. To date, research simply does not support efforts such as profile analyses of performance on intelligence tests in deciding what and how to teach children. Many diagnostic personnel recognize the fact that we must collect different kinds of data when we make different kinds of decisions. Their efforts to do so are to be commended.

Technical Adequacy of Currently Used Tests

When data are collected for the purpose of helping us make educational decisions about children, decisions that directly and significantly affect the life opportunities of those children, it is imperative that we collect our data using the most technically adequate

devices and procedures available.

We have, for some time, been able to articulate the necessary technical characteristics of good tests. In 1966, a joint committee of the American Psychological Association, American Educational Research Association, and the National Council on Measurement in Education published a document entitled Standards for Educational and Psychological Tests. This document, revised and expanded in 1974, describes in detail standards for educational and psychological tests. The standards document serves two purposes: it is a set of guidelines for test developers and a set of criteria against which test users can evaluate the technical adequacy of tests. The document has been largely ignored by both developers and users. It is important to recognize the fact that there is no regulatory commission, no "pure food and drug law," for the use of tests. The majority of currently used tests fail to meet minimal standards. The majority of test users pay little attention to the technical adequacy of their devices. There are three considerations in evaluating the technical adequacy of a test: standardization, reliability, and validity.

Standardization. Norm-referenced tests, the kind used most often in making educational decisions, are standardized by initial assessment of a reference group. When we assess children using norm-referenced tests, we assume they have been exposed to comparable acculturation, have had the same background experiences and opportunities, as those in the reference group. To the extent that the person tested differs from those on whom the test was standardized, the

use of norm tables to interpret performance is meaningless, invalid, and inappropriate. The use of data obtained in this way to make important decisions actually constitutes abuse. As Salvia and I point out (Ysseldyke & Salvia, 1974), the nature of the norm group is extremely important, because it determines both the group to whom tested children are compared and the nature and content of the test items.

To help us evaluate the extent to which the use of a particular test is appropriate for specific individuals, it is necessary that test manuals include information about the sample on whom the test was standardized. Educational practitioners too often assume that test developers "know what they're doing" and that because a test is published it meets adequate standards. One would assume, for example, that school psychologists would know the nature of the standardization samples for those tests they use daily. Yet, when I conduct workshops for school psychologists I typically find that fewer than two in any audience of 25-30 can correctly answer any of the following questions:

1. On whom was the Peabody Picture Vocabulary Test standardized?[1]

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[1]The Peabody Picture Vocabulary Test was standardized on 4,012 white, mostly middle class children in and around Nashville, Tennessee.

2. What is the nature of the standardization sample for the Slosson Intelligence Test?[2]

3. On whom were the Gates-McKillop Diagnostic Reading Test and the Durrell Analysis of Reading Difficulty standardized?[3]

The sad fact illustrated here is two-fold. First, very many of the norm-referenced tests used daily to make important educational decisions for children, decisions which directly and significantly affect their life opportunities, are inadequately standardized. Descriptions of normative data in test manuals are often so inadequate that diagnostic personnel are unable to ascertain to whom tested children are being compared. Table 2 is a list of commonly used assessment devices whose manuals include inadequate information regarding those on whom the test was standardized.

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[2]According to its author, the SIT was standardized on children and adults who "came from both urban and rural populations in New York State. The referrals came from cooperative nursery schools, public, parochial, and private schools, from junior and senior high school. They came from gifted as well as retarded classes--white, negro(sic), and some American Indian. Some came from a City Youth Bureau, some from a Home for Boys. The very young children resided in an infant home. The adults came from the general population, from various professional groups, from a university graduate school, from a state school for the retarded and from a county jail.

"Many of these individuals were difficult to test as they were disturbed, negativistic, withdrawn, and many had reading difficulties. Some suffered from neurological disorders or other defects. The only cases which were excluded from this study were individuals who could not speak English" (Slosson, 1971, p. IV).

[3]No data are reported in either the Gates-McKillop or the Durrell manual regarding the nature of the groups on whom the tests were standardized.

Insert Table 2 about here

Second, and perhaps more disturbing, is the fact that few diagnostic personnel are even aware of the nature of the standardization groups for tests they use daily. They have not been taught to report scores on the Peabody Picture Vocabulary Test, for example, by stating that "Relative to the average, white, middle-class child residing in Nashville, Tennessee, Johnny . . . ."

Failure to consider the extent to which children assessed are like those on whom a test was standardized creates enormous difficulties when handicapped children are assessed.

Reliability. Reliability refers to the extent to which an assessment device produces consistent results. A rubber ruler, for example, is an inconsistent measure of length because measurements of length can vary so much simply as a function of error in the device. Unreliable assessment leads to erroneous decision-making.

A basic assumption in psychoeducational assessment is that error is present. Reliability coefficients are indexes of the extent to which a test is free from error. The greater the amount of error in measurement, the lower the reliability coefficient.

Most measurement authorities (Nunnally, 1967; Thorndike & Hagen, 1977) argue that the level of reliability a test must have is a function of the kind of decision being made.

Nunnally (1967), for example, states that when tests are used in basic research studies, a reliability of .50 or .60 will suffice, but that "In those applied settings where important decisions are made with respect to specific test scores, a reliability of .90 is the minimum that should be tolerated, and a reliability of .95 should be considered the desirable standard" (p. 226).

Table 3 is a list of the reliabilities of some of the tests commonly used to assess learning disabled children. The reliabilities are those reported by the test authors themselves in either manuals or technical reports for the tests. The table can be summarized by noting that none of the tests listed has the reliability necessary for use in making important psychoeducational decisions. In fact, most of the tests lack the necessary reliability to be used for experimental purposes.

Insert Table 3 about here

The figures in the right-hand column of Table 3 indicate that there is great variability (1% to 59%) in the predictability gained by using tests as opposed to using nothing. These indexes of forecasting efficiency (called "coefficients of alienation") vary with the instrument used and the age of the student tested, but none is especially high. Such information further points to the questionable reliability of most tests used to assess learning disabled children.

Validity. Before a test can be said to assess what it claims to assess, it must first be shown to be reliable. Reliability is a necessary but not sufficient condition for validity. Those tests that are unreliable cannot be considered valid.

Quite obviously, the twin issues of limited reliability and validity of assessment devices underlie many of the current controversial issues relevant to the field of learning disabilities. Deficiencies in a host of test-identified factors have been cited as indicative of learning disabilities and have been said to cause academic failure We do not have the technical adequacy to measure accurately the things we so readily talk about.

The Use of Deficit Scores to Identify the Learning Disabled

Children labeled learning disabled are said to demonstrate test-identified and test-named deficits. Table 4 lists some of the deficits and disorders that have been attributed to learning disabled children. In practice, children are said to demonstrate these deficits because they earn lower scores on tests of the same name than they do on intelligence tests. Visual sequential memory deficits, for example, are identified by relatively low-level performance on the visual sequential memory subtest of the Illinois Test of Psycholinguistic Abilities.

Insert Table 4 about here

The problem in deficit-based identification of learning disabilities is twofold. First, as I have illustrated, the tests used have low reliabilities. More importantly, difference scores are nearly always less reliable than the tests used to identify differences. Statistical formulas have been developed to quantify the standard error of measurement for difference scores. These formulas are listed in Table 5.

Insert Table 5 about here

Salvia and Clark (1973) used these formulas to illustrate the fact that considerable misidentification occurs when difference scores are used to identify learning disabled children.

The issue addressed here is misidentification or misclassification. We identify children as learning disabled so we can serve them. Identification is based upon deficits, which are demonstrated using devices with limited reliability. In all seriousness, we might suggest that the great variability in current estimates of the incidence of learning disabilities (ranging from 1% to 30% of the school age population) simply reflects the large amount of error in our measurement devices.

Bias in Assessment

Public Law 94-142 mandates nondiscriminatory assessment. The law asserts (Sec. 615-5c) that states and their localities will develop:

> Procedures to assure that testing and evaluation materials and procedures utilized for the purposes of evalu-

> ation and placement of handicapped children will be selected and administered so as not to be racially or culturally discriminatory. Such materials or procedures shall be provided and administered in the child's native language or mode of communication, unless it clearly is not feasible to do so, and no single procedure shall be the sole criterion for determining an appropriate educational program for the child.

In their quest to comply with the requirements of Public Law 94-142, teams in local education agencies are currently engaged in considerable effort to identify tests and test items which are racially and culturally fair. I believe they can do so for a very long time without achieving even minor success.

Those who currently seek to identify nondiscriminatory tests should learn from the history of such efforts. Not only have psychologists failed to identify tests which are fair, but also they have not been able to reach agreement on the concept of fairness. Directly contradictory definitions of test fairness are proposed by such noted measurement experts as Cleary, Cole, and Thorndike. In a real sense, nondiscriminatory assessment is like non-fatal death. Educators can, with obvious futility, debate the fairness of items for groups of children for a very long time.

As I see it, the issue we should be addressing is bias in assessment, which would still exist even if we were suddenly to have the fair test. Salvia and his colleagues have addressed this issue in a number of investigations (Algozzine, 1976; Podol & Salvia, 1976; Ross & Salvia, 1975; Salvia, Algozzine & Sheare, in press; Salvia, Sheare & Algozzine, 1975). They demonstrated that naturally occurring pupil characteristics act to bias the decisions which teachers make

about children. Race, sex, socioeconomic status, and physical attractiveness have been shown to act as biasing factors in placement and treatment decisions made regarding children on whom there is identical information.

Bias Following Assessment

In addition to the considerable amount of bias that occurs in the making of psychoeducational decisions, a considerable amount also occurs following assessment as a function of the label assigned to a child. Foster and I (1976) investigated the effects of deviancy labels on teachers' expectations of child behavior and their ability to evaluate child behavior objectively. One hundred elementary school teachers were randomly assigned to one of four label groups. Each group dealt with one label (emotionally disturbed, learning disabled, mentally retarded, normal), and each group participated in two separate treatment phases. During phase I, teachers identified behaviors they expected to be displayed by hypothetical children denominated by the label condition. During phase II, each group saw the same videotape of a normal fourth grade boy and completed a second checklist based on the behaviors displayed during this presentation. Experimental procedures were identical for the four groups, except that each group was told the child was a member of a different category.

Results of the investigation indicated that teachers hold negative expectations toward children labeled as deviant and maintain these expectancies even when confronted with normal behavior that is inconsistent with the stated label. Maintenance of this bias is sufficient to cause teachers to misinterpret actual child behavior,

resulting in a halo effect. Results indicated that the label "educable mentally retarded" generated a greater degree of negative bias than did the labels "learning disabled" or "emotionally disturbed," although all three deviancy labels produced negative expectations and halo effects significantly different from those found under control conditions. Other research (Foster, Ysseldyke & Reese, 1975; Lee, 1975; Salvia, Clark & Ysseldyke, 1972) supports these findings.

The discrimination occurring in assessment is as much a "people problem" as it is a problem specific to the use of tests. In our efforts to eliminate bias and discrimination in assessment, it is high time we reject the practice of blaming tests and quit trying to find the fair test. We can more constructively and profitably address our efforts to identification of ways to modify or eliminate human bias, both in and following assessment.

Assessment of Abilities vs. Assessment of Skills

Assessment is only the first part of the assessment-intervention process. The nature of our assessment activities is pretty well dictated by the nature of interventions we use with children. In a very real sense, it is imperative that assessment be viewed within the assessment-intervention context.

The "ability training debate" has been with us for a long time and has been frequently addressed in the professional literature (Hammill & Larsen, 1974; Mann, 1970, 1971; Mann & Phillips, 1967; Minskoff, 1975; Newcomer, Larsen & Hammill, 1975; Ysseldyke, 1973; Ysseldyke & Bagnato, 1976; Ysseldyke & Salvia, 1974). The current

debate, while multifaceted, boils down pragmatically to "What should we assess and train?"

There are two fundamentally different approaches to the assessment and treatment of children who experience academic difficulties. Salvia and I (Ysseldyke & Salvia, 1974) labeled these "task analysis" and "ability training." These competing approaches differ in the nature of the behaviors assessed and the nature of treatments or interventions used.

Those who espouse an ability training viewpoint believe that there are specific abilities that underlie the acquisition of academic skills, and that for most children failure to acquire academic skills is a direct result of fundamental ability deficits. When children fail academically, batteries of tests are administered to identify the ability deficits that are causing failure. Remedial programs are instituted to alleviate or ameliorate the deficits and with the belief that such remedial instruction is a necessary pre-requisite to academic success.

Those who advocate a task analytic viewpoint reject the notion that for most children underlying ability deficits cause academic difficulties. When children fail academically, complex behaviors are task analyzed, and efforts are directed to identifying those enabling behaviors which children do and do not demonstrate. Typically, within this model, tests are not used. Specific assessment strategies (e.g., Bijou, Peterson, Harris, Allen, & Johnson, 1969) are designed to ascertain the extent to which children demonstrate specific skill development strengths and weaknesses. Interventions are directed toward the teaching of specific skills.

Salvia and I (Ysseldyke & Salvia, 1974) identified four critical assumptions in diagnostic-prescriptive teaching and examined the extent to which the ability training and task analysis models meet those assumptions. The assumptions are listed in Table 6. First, it is assumed that children enter a teaching situation with identifiable strengths and weaknesses. Those who espouse an ability training viewpoint talk about and seek to identify ability strengths and weaknesses. Task analysts speak of skill development strengths and weaknesses.

Insert Table 6 about here

A fundamental assumption in diagnostic-prescriptive teaching is that the strengths and weaknesses assessed are causally related to academic success. Within the ability training model, correlates of academic success and failure have been identified and have been presumed to cause failure. Within the task analysis model, there is no search for underlying causes; skill development hierarchies are emphasized.

A third assumption is that the strengths and weaknesses can be reliably and validly assessed. We have seen earlier that current measures of processes and abilities lack both reliability and validity. The ability training model fails to meet this vital assumption. Within the task analytic model, skill development strengths and weaknesses are not assessed using traditional norm-referenced testing. Rather, procedures with demonstrated reliability are used to assess skill development strengths and weaknesses.

Finally, it is assumed that pupil performance on tests tells us how to teach. Evidence for this within the ability training model requires evidence for aptitude-treatment interactions. In an extensive review of the literature on diagnostic-prescriptive teaching in 1973 (Ysseldyke, 1973), I found no evidence for aptitude-treatment interactions.

Historically, intervention efforts for learning disabled children have been ability training efforts: an attempt is made to identify those process or ability deficiencies that presumably cause academic difficulties. The ability deficiencies are test-identified constructs (e.g., "figure-ground difficulties," "form perception difficulties"), and interventions are designed to alleviate or ameliorate these underlying causes of academic difficulty. Yet, to date, there is little evidence that we are able to assess ability strengths and deficits, reliably and validly. There is even less empirical evidence to support the contention that specific interventions or treatments lead to desirable academic outcomes.

The task analysis model considers the identification of hypothetical constructs presumed to cause academic difficulties to be unnecessary; instead, the focus is on assessment of current child characteristics (usually skills), and on prescription of specific interventions based on a child's current level of academic skill development. The model is a test-teach-test model in which specific treatments have empirically demonstrated outcomes. The primary assumption in the task analysis model is that academic success or failure is due to an interaction between the child's mastery of the skills that are prerequisite to successful completion of an academic task and the characteristics

of that task. The task analysis model meets the assumptions listed earlier.

We need to address, better than we have in the past, the extent to which assessment of learning disabled students should focus on ability assessment. The issues relevant to assessment which must be addressed are as follows:

1. Is there support for the contention that ability deficits underly the failure of students to acquire academic skills?
2. Do efforts designed to alleviate or ameliorate test-identified ability deficits actually improve students' chances to succeed academically?
3. Can we continue to support the practice of identifying pupil strengths and weaknesses and assigning instructional interventions based on performance on non-reliable norm-referenced tests?
4. Can we continue to assign students to instructional interventions with little if any empirical support for the efficacy of those interventions?

Who is to Test and Decide?

Closely related to the other issues raised in this paper is the issue of who is responsible for assessing children and who is to make decisions regarding the placement of and intervention for these children. Currently, school psychologists, special education teachers, resource teachers, speech therapists, counselors, occupational therapists, and remedial reading teachers engage in some aspects of assess-

ment with children said to be learning disabled. Furthermore, most states now require that teams of professionals participate in decision-making.

Cognitive assessment is the turf of school psychologists in most states. Yet, training required to be certified as a school psychologist varies from state to state. One state (Alaska) specifies a bachelors degree as minimal training for certification; eight states specify the masters degree. Twenty-nine states require that a person must have completed a six year program; seven states require the doctorate for certification. Brown and Lindstrom (1977) surveyed state department requirements for certifying school psychologists, and reported that 32 states require coursework in specific content areas, two states specify courses, and 12 states use competency-based criteria. Clearly, requirements for certification or licensure to test are not consistent throughout the nation.

Most state education agencies require that assessment data obtained by a credentialed person be used in making important educational decisions for handicapped children. Yet, it is well known, though not clearly documented, that many school personnel commonly administer and interpret individual tests with neither the training nor the statutory authority to perform such tasks. Clearly, the potential for abuse in assessment is considerable. To the extent that those who engage in assessment lack the necessary training and expertise to administer, score, and interpret pupil performance correctly, we stand a very good chance of making many inappropriate decisions regarding children, which directly and profoundly affect their life opportunities.

The Impetus for Change in Assessment Strategies and Activities

During the past decade, and certainly during the past few years, several forces, singly and in interaction, have produced an impetus for change in the assessment strategies and activities used with school-aged children. The following specific factors are impelling change.

1. Increased Disillusionment on the Part of Classroom Teachers with the Kinds and Quality of Assessment. Classroom teachers have become increasingly vocal regarding what they perceive as limitations in the kinds and quality of current assessment activities. Study after study has shown, and my own contacts with teachers support this finding, that classroom teachers, in general, view the school psychologist as a psychometric robot, a number getter, whose sole usefulness is his or her authority to remove a deviant youngster from a classroom.

   Teachers want and need to know specifically what to do for and with children, both academically and behaviorally. Rather than getting specifics, they report that they typically receive generalities couched in impressive arrays of subtest scaled scores, grade equivalents, and psychological jargon. Rather than getting clear psychoeducational pictures of children and precise statements of specific skills which youngsters do and do not have, they report that they have received statements describing causes of a child's difficulties ranging from

unfulfilled needs and unresolved conflicts to specific ability deficits.

2. Increased Emphasis on the Rights of Children. The recent and significant revisions in public policy on the education of handicapped children are reflected in Public Law 94-142. Recent judicial and legislative rulings have mandated zero exclusion within educational settings, appropriate educational programming of all children in least restrictive educational environments, and maintenance of an educational plan for each handicapped pupil. Courts have acted in a number of cases to insure equal protection of students. Specific cases have addressed the provision of services to handicapped pupils. We must note with special attention the fact that the substantive issue in nearly all court cases relevant to the education of handicapped students (Hobson v. Hansen, 1967; Mills v. Bd. of Educ., 1972; P. v. Riles, 1972; Pennsylvania Association for Retarded Children v. Commonwealth of Pennsylvania, 1972; Washington v. Davis, 1976) has been abuse in assessment. Bersoff and I (1977) noted that:

> Courts develop rules of conduct in piecemeal fashion and only when litigants present legally cognizable issues. Rule-making bodies, on the other hand, such as legislatures and government agencies need not wait for complaining parents or children to sue school systems. When lawmakers determine that certain problems need a broader reach than courts can provide, when problems begin to affect a great many people, or for other good reason, they begin to enact statutes and regulations which have comprehensive effect. This process is in full swing in special education. If we have just passed through the era of litigation,

> the mid 1970's are clearly the era of legislation. It is in this legislation proclaiming the rights of handicapped persons (and those misclassified as handicapped) that assessment practices...are most affected. (pp. 6-7)

3. Mandated Nondiscriminatory Assessment. I noted earlier that Public Law 94-142 mandates nondiscriminatory assessment. The mandate is having, and will continue to have, an impact on the kinds of assessment procedures and activities in which educational personnel engage.

4. Increased Activity in Mainstreaming Handicapped Children. Educational personnel are increasingly required to make recommendations on the "least restrictive" placement of students denominated handicapped. Most have had training in distinguishing only between pupils who need self-contained placement and those who should remain in regular classes. As the number of possible placements increases and the boundary lines between them shift, training and retraining of those who must make placement decisions is necessary.

5. Increased Movement Toward Individualization of Instruction for Increasing Numbers of Children. Public Law 94-142 mandates development of individualized educational programs for all handicapped youngsters. A written statement is to be developed for each child. It is to specify (a) the child's present levels of educational performance, (b) the goals for the child, including short-term instructional objectives, (c) the educational services to be provided to the child, including the extent to which the child will be able to

participate in regular educational programs, and (d) the projected date for initiation and anticipated duration of services, and the criteria, procedures and schedules for evaluating whether instructional objectives are being achieved.

The mandate for individual educational plans for handicapped children will be implemented in most schools by teams of regular and special educators and school psychologists. Few professionals are currently able to apply their knowledge of assessment to program planning. Empirical evidence for assessment-intervention links is missing.

6. Due Process. Parents are becoming increasingly involved in educational planning for their children. Court mandates have enunciated the right of children and their parents to due process hearings when changes in educational programs are proposed. Current assessment procedures will be challenged; diagnostic personnel must be willing and able to back up their decisions with data.

Clearly, there are many forces serving as an impetus for change in current assessment practices. It is imperative that professionals carefully consider the future of assessment activities and plot a course for appropriate assessment of learning disabled children.

The Appropriate Use of Assessment Information

I firmly believe that it is incumbent on those who raise issues and address problems to propose mechanisms for dealing with those issues and problems. I also believe that no one person is able to

address effectively the complex set of issues so apparent in assessment of learning disabled children. Many professionals and professional organizations have articulated their positions on the issues I have described, and the one thing most obvious is that there is considerable disagreement among those most concerned about the current state of affairs.

Assessment is a critical component in the assessment-intervention process. Assessment data are used to make educational decisions, and we must consider ways in which the assessment data we collect interface with the kinds of decisions we make. One of the primary problems in the assessment of learning disabled children has been the failure of assessors to differentiate their strategies and tools in light of the kinds of decisions to be made. We witness today considerable global thinking regarding assessment; tests are viewed as either "good" or "bad," there are calls for moratoria on testing activity, and statements are made that norm-referenced tests should never be used and that criterion-referenced assessment is a panacea for all our testing ills.

It is high time we engage in and facilitate differentiated assessment. No test is universally good for all purposes, and a few tests are universally bad for all purposes. The extent to which specific assessment activities are appropriate is a function of an interaction between the kinds of data provided by those activities and the kinds of decisions we are required to make. Norm-referenced tests were designed for the purpose of helping professionals make decisions requiring comparisons of individuals to groups (screening, placement,

evaluation of individual pupil progress); they do a reasonably effective job and generally are technically adequate for that purpose. Information on pupil performance on norm-referenced tests is, however, relatively useless in planning instructional interventions. Interventions can best be planned on the basis of the extent to which students demonstrate specific skills, information characteristically obtained from criterion-referenced tests. Those who assess children often use identical tools and procedures regardless of the decision to be made. Assessors must be trained or retrained to engage in differentiated assessment.

A second, and obviously related, need is to view tests as samples of behavior. Pre-service training has typically consisted of education in the use of specific tests, and assessors too often approach the assessment of a pupil by asking "What tests should I (or can I) give to this child?" The appropriate question in assessment is: "What behaviors do I want to sample?" This distinction is important in that it results in the use of specific tests or subtests which will yield the data needed to help make decisions, rather than simply yielding a set of test or subtest scores. Viewing tests and test items as samples of behavior should keep us from making unwarranted inferences based on test or subtest names.

The third pressing need is the use of technically adequate assessment devices with children. It is a fact that many of the norm-referenced tests currently used to collect data on children have been inappropriately standardized. Assessors must continuously consider the extent to which the children they assess have acculturation

comparable to those on whom the test was standardized. Many tests do not report the nature of the group on whom they were standardized; others were inappropriately standardized. We should discourage the norm-referenced use of such devices.

Earlier, I described the issue of using unreliable tests. There are two ways to proceed in efforts to clean up this practice. We could restrict assessment to the use of only those tests with sufficient reliability to be used in decision-making. Obviously, this would limit considerably the number of tests we could use. A second, and less restrictive, way of dealing with the reliability issue would be to recommend the use of estimated true scores rather than obtained scores in interpreting pupil performance on norm-referenced tests.

Salvia and I (1978) describe in detail the reasons for using estimated true scores and the steps in computing these scores. Briefly, estimated true scores compensate, to a certain extent, for limited reliability by incorporating information about the test mean and the test reliability.

Typically, diagnostic personnel report obtained scores and, if they do so at all, construct their confidence intervals around obtained scores. I am suggesting we compute estimated true scores for all obtained scores, construct confidence intervals around estimated true scores, and interpret assessment information in light of these considerations. Such practices should help eliminate some of the error in assessment and contribute to more intelligent decision-making.

I addressed earlier the issue of using difference scores to identify learning disabled children. Clearly such a practice is

fraught with problems and is at best questionable. I want to go beyond simply recommending that assessment personnel compute the reliabilities and standard errors of measurement for difference scores. I believe we should abolish the practice of using such scores to identify learning disabled children.

The issue of limited validity for many currently used assessment devices can be addressed best by endorsing two of the regulations proposed by the Office of Civil Rights (Federal Register, July 16, 1976) relative to implementation of the Rehabilitation Act of 1973 (Public Law 93-112 as amended by Public Law 93-516). OCR proposes that:

1. All evaluation devices must be properly and professionally validated for the specific purpose for which the school proposes to use them, and
2. All evaluation devices must be recommended by their producer for the specific purpose for which the school proposes to use them and administered only by trained personnel.

Mandated nondiscriminatory assessment is a legal requirement that is going to be exceedingly difficult to comply with. The requirement is obviously closely entwined with the decision-making process in special education. The real issue is nondiscriminatory decision-making.

For a variety of reasons, educational personnel are required to classify and place students. Norm-referenced assessment devices are used as data collection instruments in the decision-making process. As noted earlier, current efforts to comply with the legal requirement of nondiscriminatory assessment consist primarily of efforts to identify

the tests or test items that are fair for groups of students. Such efforts will likely be futile. Fairness decisions can be made, but only on an individual basis. Those who assess children for the purpose of making placement decisions must be ever aware of the extent to which the children they assess have acculturation comparable to that of the group on whom specific tests were standardized. They must be aware of the fact that validity is seriously affected when children are compared to others who are systematically different from them, and that interpretations are limited in such cases. Other forms of bias occur following assessment.

Considerable empirical evidence supports the contention that the kinds of decisions made for children are biased as a function of naturally occurring characteristics such as race, sex, socioeconomic status, ethnicity, and physical attractiveness. Also, educators hold negative expectations for stereotypically labelled groups of children, and they retain those stereotypes even when confronted with behavior incongruent with the label. The question of how we can change this situation and foster objectivity is an empirical question. We must begin to identify specific ways of changing the expectations that educators hold for different groups of children, including those labelled handicapped, and to incorporate such procedures into preservice and inservice training of teachers.

Educators have long debated and heatedly discussed the question of which instructional approach is "best" for children. Joyce and Weil (1972) effectively summarize the evidence on this question.

> The research evidence dealing with this question is remarkably ambiguous. There have been several hundred studies comparing one general teaching method to another,

> and the overwhelming portion of these studies, whether curriculums are compared, specific methods for teaching specific subjects are contracted, or different approaches to counseling are analyzed, show few if any differences between approaches. Although the results are very difficult to interpret, the evidence to date gives no encouragement to those who would hope that we have identified a single reliable, multipurpose teaching strategy that we can use with confidence that it is the best approach. (p. 4)

No one broad method of instruction is universally effective. Nevertheless, we have continued to assume that different methods are effective with different kinds of children. For better than a decade we have been assigning learning disabled children to specific instructional interventions with little or no empirical evidence to support the contention that they will profit from intervention. Hallahan and Cruickshank (1975) have noted some interesting distinctions between programs for learning disabled children and those who are in other ways handicapped. They note that instructional programs for the mentally retarded were instituted only after considerable research on learning in mentally retarded persons. Programs for learning disabled children were established prior to the presence of empirical evidence on ways of teaching such children. The assumption that different children learn best when instruction is tailored to their individual differences brings us back to the assessment-intervention link. In practice we have administered batteries of norm-referenced tests to children and have assigned them to instructional programs on the basis of their test performance. Again, we have little empirical support for doing so. We have not demonstrated that ability deficits cause academic difficulties, that ability strengths and weaknesses can be reliably and validly assessed, or that there are interactions

between children's performance on tests and the extent to which they profit from differential instruction.

Research on the assessment-intervention process is desperately needed. We must strive to develop reliable and valid measures of specific processes or abilities. We must, using an aptitude-treatment interaction methodology, attempt to identify interactions between test performance and instructional treatments. A science of instructional intervention can come only following such research endeavors.

In practice, it is time to call a halt to current diagnostic-prescriptive efforts characterized by assignment of children to ineffective instructional programs based on their performance on unreliable norm-referenced devices. Instead, we need to shift our assessment-intervention efforts to strategies for which we do have support. We should restrict our assessment to the assessment of specific skill development strengths and weaknesses, and our instructional interventions to the teaching of skills (Kazdin, 1975; Kazdin & Straw, in press). Hunt (1975) states:

> Psychological assessment should guide teaching. It should tell a teacher what kinds of assignments and curricular materials a given child can utilize profitably to foster his psychological development and pick up the knowledge and skills which he must acquire in order to adapt to his culture. The form of psychological assessment now most prevalent in education fails utterably to do this. (p. 545)

When planning instructional programs for children, it is imperative that we shift away from the currently dominant prediction orientation to one that will facilitate instructional planning. As Reynolds (1975) has observed:

> We are in a zero-demission era; consequently, schools require a decision orientation other than simple prediction; they need one that is oriented to individual rather than

> institutional payoff. In today's context, the measurement technologies ought to become integral parts of instruction, designed to make a difference in the lives of children and not just a prediction about their lives. (p. 15)

Finally, we must decide who tests. Once again, this must be considered in light of the kinds of decisions made using assessment data. Hopefully, this question will not be answered by simply asserting that only those who hold the necessary credentials should assess children, for it is readily apparent that credentials and competence are too often unrelated. Those who assess children must have the necessary training and expertise to do so. They must be skilled in establishing rapport with children, in correct test administration, in scoring, and in interpretation. They must be able to evaluate the technical adequacy of the tests they use, to ascertain the behaviors sampled by tests, and to differentiate strategies and tools in light of the kinds of decisions they are charged with making. Assuring that this will occur is extremely difficult, and the obvious problems now apparent in the system must be addressed at several levels.

First, pre-service training of educational personnel must include more training in the intelligent use of tests and assessment information. Second, considerable re-training of assessors must be done. Most professionals have been inadequately prepared to meet the complex set of demands now placed on them. Third, we must work with state departments of education in an effort to insure that only competent persons are credentialled and that there is a system of continuing education for personnel charged with the task of gathering assessment information and using it to make important decisions which directly and significantly affect the lives of children.

I noted in my introduction that the state of the art in assessing learning disabled children is not good. I have described the many reasons why I believe this is so. You are aware of the many complex problems and issues that must be addressed, and awareness, hopefully, will lead to action. I ask you to join me in efforts to improve current assessment and decision-making practices to the end that, someday, the only effect of assessment will be the enhancement of children's life opportunities.

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Footnote

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Table 1

Number of States and Respective Percentages of Components Included in State Definitions

Components	No. of States	Percent	Components	No. of States	Percent
Definition			Exclusion - primary & secondary		
NACHC only	9	21.4%	Visual impairment	3	7.1%
NACHC with variations	15	35.7%	Auditory impairment	3	7.1%
Different	16	38.1%	Motor impairment	2	4.8%
None	2	4.8%	Mental retardation	11	26.2%
Intelligence			Emotional disturbance	1	2.4%
Average and above	11	26.2%	Environmental disadvantaged	1	2.4%
Above mental retardation	8	19.1%			
Not stated	23	54.8%	Neurological impairment		
			Included	4	9.5%
Process			Not included	0	.0%
Process disorder	36	85.7%	Possible	26	61.9%
Language disorder	35	83.3%	Not stated	12	28.6%
Academic			Affective		
Reading	31	73.8%	Includes emotionally disturbed	4	9.5%
Writing	31	73.8%	Includes socially maladjusted	6	14.3%
Spelling	31	73.8%			
Arithmetic	31	73.8%			
Exclusion - primary			Miscellaneous		
Visual impairment	26	61.9%	Attention deficits	5	11.9%
Auditory impairment	26	61.9%	Motor deficits	7	16.7%
Motor impairment	23	54.8%	Thinking deficits	30	71.4%
Mental retardation	21	50.0%	Discrepancy component	12	28.6%
Emotional disturbance	25	59.5%	Special Education required	14	33.3%
Environmental disadvantaged	23	54.8%	Intraindividual differences	4	9.5%
			Prevalence	2	4.8%
			Chronological Age	4	9.5%

From Mercer, C., Forgnione, C., & Wolking, W. D. Definitions of learning disabilities used in the United States. Journal of Learning Disabilities, 1976, 9, 376-386.

Table 2

Tests with Norms That Are Inadequately Constructed or Described

Arthur Adaptation of the Leiter International Performance Scale (13)[a]
Bender Visual Motor Gestalt Test (15)
California Achievement Test (9)
Culture Fair Intelligence Tests (14)
Cognitive Abilities (14)
Developmental Test of Visual-Motor Integration (15)[b]
Developmental Test of Visual Perception (15)
Diagnostic Reading Scales (10)[b]
Durrell Analysis of Reading Difficulty (10)[b]
Full-Range Picture Vocabulary Test (13)[b]
Gates-MacGinitie Reading Tests (9)[b]
Gates-McKillop Reading Diagnostic Tests (10)[b]
Gilmore Oral Reading Test (10)
Goodenough Harris Drawing Test (14)
Gray Oral Reading Test (10)
Henmon-Nelson Tests of Mental Ability (14)
Illinois Test of Psycholinguistic Abilities (17)
Memory for Designs Test (15)
Metropolitan Achievement Test (9)
Peabody Picture Vocabulary Test (13)
Primary Mental Abilities Test (14)
Purdue Perceptual-Motor Survey (15)
Quick Test (13)
Silent Reading Diagnostic Tests (10)
Slosson Intelligence Scale (13)
Stanford-Binet Intelligence Scale (13)
Wide Range Achievement Test (9)

[a] Numbers in parentheses refer to the chapter in which the test is described.

[b] These tests include norms in their manuals but include no data about the group on whom the test was standardized.

Table 3

Frequently Used Ability Measures: Their Reliability and Forecasting Efficiency

Measure	Reported test-retest reliability	Percent increase over chance
Developmental Test of Visual Perception	.69	27.62
Eye Motor Coordination	.29-.39	4.3- 7.9
Figure Ground	.33-.39	5.6- 7.9
Form Constancy	.67-.74	25.1-32.7
Position in Space	.35-.70	6.3-28.6
Spatial Relations	.52-.67	14.6-25.8
Bender Visual Motor Gestalt Test	.39-.66	7.9-24.9
Chicago Test of Visual Discrimination	.35-.68	6.3-26.7
Revised Visual Retention Test	.85	47.3
Memory for Designs Test (Graham-Kendall)	.72-.90	30.6-56.4
Primary Visual Motor Test	.82	42.8
Developmental Test of Visual Motor Integration	.80-.87	40.0-50.7
Illinois Test of Psycholinguistic Abilities	.66-.91	24.9-58.5
Auditory Reception	.36-.79	6.7-38.7
Visual Reception	.21-.69	2.2-27.6
Auditory Association	.62-.90	21.5-56.4
Visual Association	.32-.75	5.3-33.7
Verbal Expression	.45-.74	10.7-32.7
Manual Expression	.40-.70	8.4-28.6
Grammatic Closure	.49-.87	12.8-50.7
Visual Closure	.57-.82	17.8-42.8
Auditory Sequential Memory	.61-.89	20.8-54.4
Visual Sequential Memory	.12-.71	0.7-29.6

From Ysseldyke, J. E. & Salvia, J. Diagnostic-prescriptive teaching: Two models. Exceptional Children, 1974, 41, 181-186.

Table 4

Some Examples of Deficits and

Disorders Attributed to Learning Disabled Children

Visual Perceptual Deficit

Figure-ground Pathology

Auditory Processing Disorder

Visual Sequential Memory Deficit

Body Image Problem

Eye-hand Coordination Difficulty

Grammatic Closure Deficit

Poor Perceptual-Motor Match

Manual Expression Disorder

Table 5

Formulas for the Reliability and Standard Error of Measurement for Difference Scores

$$r_{xx(dif)} = \frac{\frac{1}{2}(r_{aa} + r_{bb}) - r_{ab}}{1 - r_{ab}}$$

$$SEM_{(dif)} = \left[\sqrt{Sa^2 + Sb^2 - 2r_{ab}\ Sa\ Sb}\right]\left[\sqrt{1 - r_{xx(dif)}}\right]$$

Table 6

Assumptions in Diagnostic-Prescriptive Teaching

1. Children enter a teaching situation with strengths and weaknesses.
2. Strengths and weaknesses are causally related to academic success.
3. Strengths and weaknesses can be reliably and validly assessed.
4. Pupils' performance on diagnostic devices tells us how to teach them.

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* As part of its continuation proposal, the Institute was required to prepare these monographs. Because they are part of the proposal, they are not available for general distribution.